

PATENT ABSTRACTS OF JAPAN

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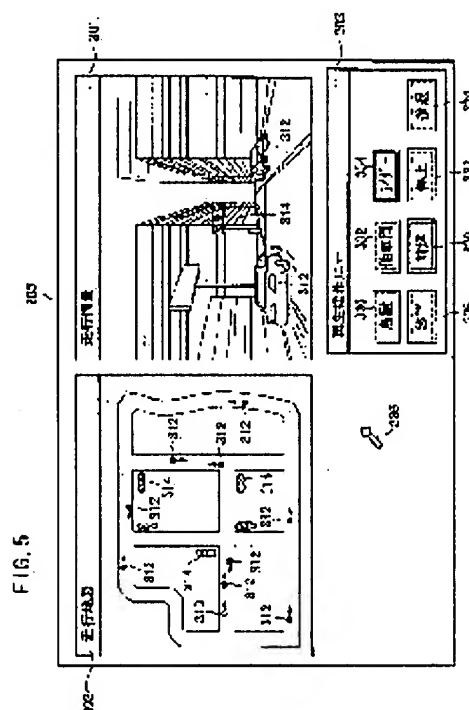
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(54) DRIVING SIMULATOR

(57)Abstract:

PROBLEM TO BE SOLVED: To enable an instructor to quickly give, while watching a monitor screen, appropriate advice to an operator of a simulated vehicle.

SOLUTION: A travel map screen 302, displaying other vehicles in traffic or traffic signal information, a reproduction control menu screen 303, and a travel scene screen (CG picture screen) 301 the operator of the simulated vehicle is watching are simultaneously displayed on a monitor 205, which an instructor is watching. Thus, the instructor 150 can give, especially while watching the travel scene screen 301 and the travel map screen 302, appropriate and quick advice to the operator of the simulated vehicle (the vehicle driven by the operator) 310.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is displaying a transit sight as an image on a display unit based on control actuation of the simulation car by the operator, and relates to the riding simulation equipment to which the virtual experience of the run state is carried out to an operator.

[0002]

[Description of the Prior Art] the rider as an operator from the former -- various kinds -- the activity is presented with the riding simulation equipment for two-wheel barrows which combined the display unit using CRT which displays the image of the request including the transit way concerning the run state of an operational simulation two-wheel barrow and this simulation two-wheel barrow as the object for games, or an object for the operation education of a two-wheel barrow.

[0003] It is prepared on a pedestal as indicated by JP,4-51078,A. For example, the movable carriage which can move in right and left and the vertical direction freely approximately, It is installed the driving means which drives this movable carriage, and on said movable carriage. A simulation two-wheel barrow operational in a rider, While being arranged ahead of said simulation two-wheel barrow, controlling said driving means according to the display unit which displays the image memorized beforehand, and actuation and a motion of a rider and controlling the yaw, the roll, and pitch ** of said simulation two-wheel barrow The riding simulation equipment of a two-wheel barrow equipped with the control means to which the image displayed on said display unit is changed according to the run state of said simulation two-wheel barrow is known.

[0004] In addition, CGI (computer generated image) equipment is built into the display unit, and said CGI equipment is received. By inputting the current behavioral information of simulation cars, such as currency information of the simulation car concerned concerning the behavior of a simulation car, current rate information, the direction information of a current yaw, current pitch *****, and current roll ***** CG image assumed to appear ahead of said simulation car, i.e., CG image of a transit way including scenery, CG image including the condition of a signal, CG image of other cars, etc. are displayed on real time in the condition of having been compounded on the display unit.

[0005] Moreover, in addition to this, the driving simulation equipment for wagons is also put in practical use.

[0006]

[Problem(s) to be Solved by the Invention] By the way, in such riding simulation equipment, the display unit (it is called a subdisplay unit or a monitor.) which displays said CG image to be arranged in the location which separated a few from the simulation car besides the display unit (for it to also be called the main display unit.) which displays CG image to be arranged ahead of a simulation car and for the rider who is an operator see, and for a teacher (instructor) etc. see is formed.

[0007] In this case, on the monitor concerning the conventional technique, said CG image screen and the transit map screen in which other traffic car information and signal information are shown can be switched, and can be seen now.

[0008] Although instructor had given suitable ADOAISU for the operator who is controlling the simulation car for this screen with a switch, there was a problem of taking time amount a little until this switch is troublesome and it gave suitable advice.

[0009] This invention aims at offering the riding simulation equipment which makes it possible to give the suitable advice for the operator of a simulation car promptly etc., while it is made in consideration of such a technical problem and instructor looks at monitor display.

[0010] Moreover, this invention aims at offering the riding simulation equipment which makes it possible to consider as CG image screen observed from the view of a request of CG image screen on such monitor display.

[0011] Furthermore, this invention is specifying the request location on the transit map screen displayed on the monitor, and aims at offering the riding simulation equipment which makes it possible to display CG image screen observed from the desired view in that request location.

[0012]

[Means for Solving the Problem] In the riding simulation equipment to which this invention displays a transit sight as an image on the main display unit based on control actuation of the simulation car by the operator, and the virtual experience of the run state is carried out to an operator A transit map generation means to generate the transit map data of said simulation car, and a storage means to memorize condition data including the run state of said simulation car in the time of simulation, A subdisplay unit other than said main display unit, and the image screen of said transit sight based on the condition data memorized by said storage means, It is characterized by having a display-control means to display simultaneously the transit map screen corresponding to the transit map data generated by said transit map generation means on said subdisplay unit (invention according to claim 1).

[0013] According to this invention, instructor can give the suitable advice for an operator promptly by, being able to check easily the current position of the car which is carrying out simulation transit on a transit map for example, and seeing this simultaneous display screen on a subdisplay unit, with a display-control means, since it was made to display a transit map screen and the image screen (CG image screen) of a transit sight simultaneously (on the same screen).

[0014] In this case, instructor can give suitable advice more to accuracy to the operator of a simulation car by displaying other traffic car information on a transit map screen (invention according to claim 2).

[0015] Moreover, actuation can be easily reviewed under instructor's instruction by displaying the playback actuation means display screen simultaneously (invention according to claim 3).

[0016] In this case, the image screen of a desired view to a transit sight can be seen on the playback actuation means display screen by establishing the view means for switching switched at the view by the other car view or operator who looked at the simulation car from the bird's-eye view view containing for example, a simulation car, and the other car.

[0017] Moreover, the image screen (CG image screen) of a transit sight seen from the desired location with the desired view can be displayed by specifying the location of the request on a transit map screen with tab-control-specification means (mouse click etc.).

[0018]

[Embodiment of the Invention] Drawing 1 is the outline configuration explanatory view of the riding simulation equipment 10 concerning the gestalt of this operation.

[0019] Riding simulation equipment 10 is equipped with the motion unit section 16 which can be detached and attached freely, and the console (it is also called an instructor table or a control table.) 201 connected by the communication wire 200 (200a, 200b) to said controlling mechanism 12 through a linkage 14 to the controlling mechanism 12, currently installed in the floor line 34, and this controlling mechanism 12.

[0020] The controlling mechanism 12 is equipped with the display box 20 established in the control circuits 18, such as a minicomputer, the body section 19 which holds CGI equipment 23, and the upper part of this body section 19. The console 201 is equipped with the monitors (subdisplay unit) 205 connected to the computer 202 which operates also as a host computer to a controlling mechanism 12, and this computer 202, such as the keyboard 203 as an input means, a mouse 204, and a CRT display

that is a display means.

[0021] The computer 202 which constitutes the console 201 operated by instructor 150 is equipped with the storage section 207 as a storage means which remembers the condition at the time of simulation, such as a run state of a self-vehicle (simulation two-wheel barrow 30 mentioned later), other vehicle, and a signal, (at the time of simulation transit) to be CPU206 which functions as control, decision, a count means, etc. as condition data as shown in drawing 2.

[0022] The storage section 207 consists of hard disks which are RAM and the mass storage medium of ROM and operating which memorize a system program etc. The map data which contain the transit course of the simulation two-wheel barrow 30 in this mass storage medium, the playback menu display program mentioned later, the application program which divides and displays the screen of a monitor 205 in a window are memorized beforehand.

[0023] CPU206 is transit map data for simulation two-wheel barrow 30 (as opposed to the above-mentioned map data) which are a simulation car. A transit map generation means to generate data including the current position of a simulation car, the current position of an opposite car, the luminescence condition of the red, yellow, and blue in this time of a signal, etc., It functions also as a display-control means to carry out screen separation of the image screen of the transit sight based on the condition data memorized by the storage section 207, and the transit map screen corresponding to the transit map data which self generated, and to display them simultaneously on a monitor 205.

[0024] Therefore, CPU206 has the function on which the information on other traffic cars is displayed on said transit map screen in a monitor 205.

[0025] CPU206 has the function on which the screen which displays playback actuation means (playback manual operation button) which are needed on a monitor 205 in the case of playback actuation, such as "advance", "a halt", and "retreat", is displayed further again.

[0026] CPU206 has the function on which the screen which displays the view means for switching which switches "a bird's-eye view" (bird's-eye view view containing a simulation car), the "other car" (other car view which looked at the simulation car from the other car), or a "rider" (view by the operator) on a monitor 205 is displayed further again.

[0027] With the gestalt of this operation, it is made to perform the screen display of these view means for switching into the screen display of the above-mentioned playback actuation means so that it may mention later.

[0028] CPU206 is what (mouse click) the location of the request on a transit map screen is pointed at for by the mouse cursor, and functions further again also as a tab-control-specification means by which the image screen of a transit sight can be seen with a desired view from the location of the request.

[0029] In addition, a control circuit 18, CGI equipment 23, the keyboard 203, the mouse 204, and the monitor 205 are connected to the computer 202 through interfaces 209, 210, and 211. Moreover, a control circuit 18 is similarly equipped with a central processing unit, a storage means, etc.

[0030] The display box 20 has the projection display (the main display unit) 24 which has a screen while incorporating a loudspeaker unit 22, as shown in drawing 3.

[0031] Fundamentally, a display unit 25 consists of a display 24 and CGI equipment 23, and displays various run states including a transit way as a transit sight image on the screen 24. In this case, CGI equipment 23 displays promptly the pattern of a motion of a dynamic body (for example, other car) and a static object (for example, scenery, a transit way, a signal) on a display 24 using the information transmitted from the information transmitted from a control circuit 18, and a computer 202, and an own computer (large capacity storage, such as CPU, ROM, RAM, and a hard disk, etc. is included.).

[0032] Here with the information transmitted from a control circuit 18 Current position data, current yaw data fundamentally concerning the behavior of the simulation two-wheel barrow 30, Current rate data, current acceleration data, current pitch ** data, current roll ** data,

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the explanatory view showing the whole operation gestalt configuration of the riding simulation equipment concerning this invention.

[Drawing 2] It is the circuitry block diagram of the console shown in drawing 1.

[Drawing 3] It is drawing which looked at the riding simulation equipment shown in drawing 1 from back.

[Drawing 4] It is configuration block drawing of the control circuit of the riding simulation equipment shown in drawing 1.

[Drawing 5] It is the explanatory view of the transit sight screen by which it was indicated by simultaneous on the monitor, a transit map screen, and a playback actuation menu screen.

[Description of Notations]

- 10 -- Riding simulation equipment
- 12 -- Controlling mechanism 16 -- Motion unit section
- 18 -- Control circuit 23 -- CGI equipment
- 24 -- Display (the main display unit)
- 25 -- Display unit 28 -- Rider (operator)
- 30 -- Simulation two-wheel barrow (simulation car) 150 -- Instructor
- 201 -- Console 202 -- Computer
- 205 -- Monitor (subdisplay unit)
- 206 -- CPU (a transit map generation means, display-control means)
- 207 -- Storage section (storage means) 301 -- Transit sight screen
- 302 -- Transit map screen 303 -- Playback actuation menu
- 310 -- Self-car (simulation car) Traffic car besides 312 --
- 314 -- Signal 320 -- Advance carbon button
- 322 -- Earth switch 324 -- Retreat carbon button
- 326 -- Playback termination carbon button 330 -- Bird's-eye view view carbon button
- 332 -- Other car carbon button 334 -- Rider view carbon button
- 336 -- Mouse cursor carbon button

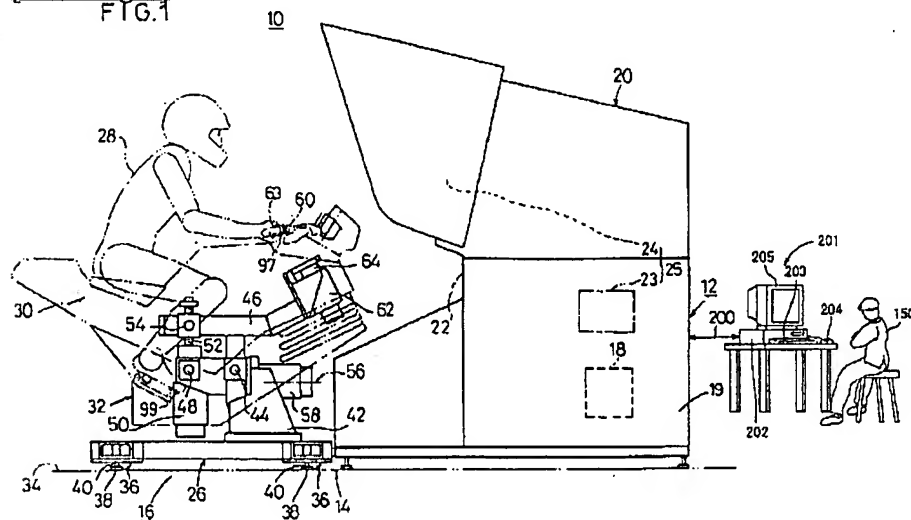
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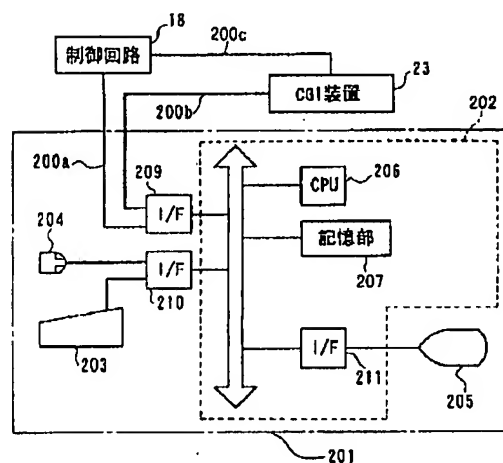
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DRAWINGS

[Drawing 1]
FIG. 1

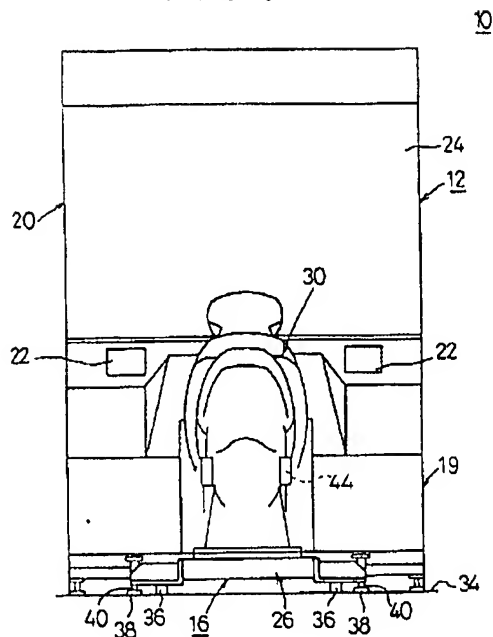
[Drawing 2]

FIG. 2



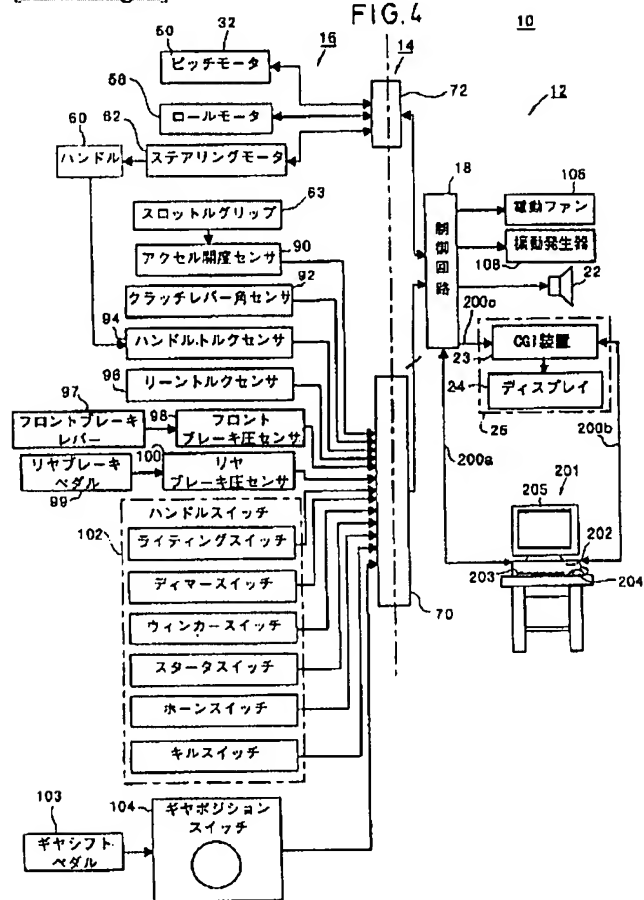
[Drawing 3]

FIG. 3



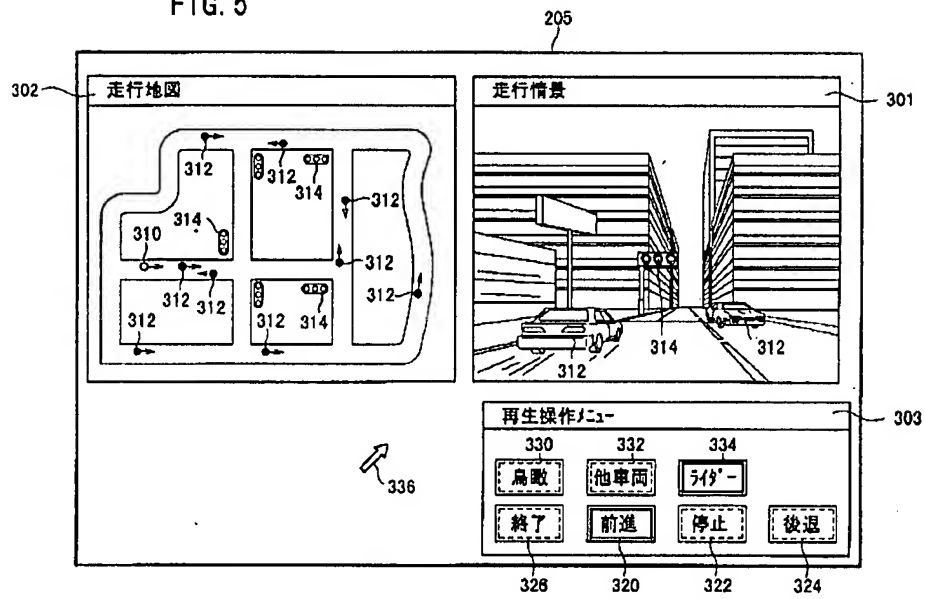
[Drawing 4]

FIG. 4



[Drawing 5]

FIG. 5



[Translation done.]